

**U.S.D.I. BUREAU OF LAND MANAGEMENT
RAWLINS FIELD OFFICE, WYOMING**

ENVIRONMENTAL ASSESSMENT

EA NUMBER WY-030-06-EA-180

BLM Case No. WYW-166543

State Case No. 0706003

Proposed Action Title: Hatfield 3D Geophysical Exploration Project

Applicant: Dawson Geophysical Corporation

Project Type: 3D Seismic Survey

Location: Carbon County, Wyoming, 6th P.M.* (See Attached Map, Figure 1)

T 19 N, R 87 W	5, 6, 7, 8,
T 19 N, R 88 W	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 26, 27, 28, 29, 30, 31, 32, 33, 34
T 19 N, R 89 W	1, 2, 3, 4, 9, 10, 11, 12, 13, 14, 15, 16, 21, 22, 23, 24, 25, 26, 27, 28, 33, 34, 35, 36
T 20 N, R 87 W	19, 20, 21, 28, 29, 30, 31, 32, 33
T 20 N, R 88 W	19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36
T 20 N, R 89 W	24, 25, 26, 33, 34, 35, 36

- * Sections that are emboldened have the surface completely or partially administered by the BLM. The remaining Sections are fee or State of Wyoming surface estate (please refer to attached Project Map, Figure 1, for surface ownership within the project area).

INTRODUCTION

On December 5, 2005, Dawson Geophysical Corporation (Dawson Geophysical) filed a "Notice of Intent" (NOI) with the Bureau of Land Management (BLM) to propose a 3-Dimensional (3D) geophysical operation in the vicinity of Hatfield Dome in Carbon County, Wyoming. The center of the project is located approximately 12 miles south of Rawlins, Wyoming. The survey would consist of approximately 85 square miles. In the project area, there are approximately 41% BLM lands, 4% State lands, and 55% Private lands. It is anticipated that operations would begin in the Spring/Summer of 2006 and last 100 days more or less.

Need for the Proposed Action

The proposed action is needed to acquire and evaluate subsurface geological data for possible exploration and/or development of oil and gas reserves. Geophysical exploration utilizing 3D techniques is an intensive data acquisition and computer synthesis system used to analyze and three dimensionally depict subsurface geology/stratigraphy. The technique is capable of locating and displaying unknown subsurface pools or pockets that potentially contain producible hydrocarbons. Well drilling is occurring and Applications for Permits to Drill (APDs) have been submitted in portions of the proposed project area. This is scheduled to continue in the foreseeable future. The proposed project should enable wells to be drilled with a much greater probability of locating producible hydrocarbons than is normally attainable by

utilizing previous methods such as two dimensional (2D) seismic data and wildcat wells. Completion of the project should result in fewer non-productive wells, or dry holes, being drilled in an area, and therefore, overall less surface disturbance from access road, pipeline, and drill sites.

Conformance with Applicable Land Use Plans

The proposed action is in conformance with the Great Divide Resource Management Plan (RMP) approved on November 8, 1990. The plan was reviewed to determine if the proposed action conforms to the land use plan terms and conditions as required by 43 CFR 1610.5-3. The geophysical exploration project described in the proposed action is in conformance with the RMP decision as described in the Minerals Management Decision portion of the document

Relationships to Statutes, Regulations, or other Plans

This environmental assessment was prepared in accordance with the requirements of the National Environmental Policy Act of 1969 (NEPA) and other statutes and regulations applicable to the project. Impacts to the entire proposed project area, including state and private lands, have been considered. BLM approval of a Notice of Intent would permit an operation to take place on BLM-administered land, subject to conditions of approval. BLM approval would not constitute permission to operate on non-federal lands.

Authority for geophysical prospecting on BLM-administered public lands is contained in the Mineral Leasing Act of February 25, 1920, Title 30 Chapter 3A, as amended, and the Code of Federal Regulations 43 CFR 3150. Other relevant policy and direction includes BLM Management Manual Handbook H-3150-1.

The development of this project would not affect the BLM's ability to achieve Wyoming Standards for Healthy Rangelands (August 1997).

Sage Creek is listed on the Wyoming Department of Environmental Quality's 303(d) Impaired Stream List for 2004. Physical degradation is listed as the impairment. This degradation occurs in the North Platte River where the Wyoming Game and Fish Department downgrades the North Platte from a Class I to a Class II fishery below the confluence as a result of the sediment contribution of Sage Creek. The Saratoga-Encampment-Rawlins Conservation District (SERCD) received a section 319 grant in 1998 to address numerous sediment-reducing Best Management Practices (BMPs) in the watershed; the project has just completed Phase II (SERCD, 2006). SERCD has initiated a Use Attainability Analysis for Sage Creek that may change its water quality classification to protection of non-game aquatic life from protections for game fisheries.

Remarks

Dawson's NOI and their Plan of Operation contain a complete description of the geophysical project. The NOI and Plan of Operation are considered an integral part of this environmental assessment and are incorporated by reference. These documents were filed with the BLM, Rawlins Field Office.

DESCRIPTION OF THE ALTERNATIVES

General Seismic Methodology

The general technique of the geophysical exploration proposed is referred to as seismic reflection method. This method utilizes an energy source which sends acoustic energy into the earth. This energy is reflected from subsurface layers and recorded at the surface with an instrument used to transform seismic energy into electrical impulses (*geophones or receivers*). The data collected is then processed

by computer to create an image of the subsurface geology. The vibroseis method that Dawson Geophysical proposes generates seismic waves created by specialized trucks equipped with large metal pads that vibrate the ground. At each energy source location, vibrating buggy trucks lower their pads to the ground to create seismic waves. In areas with limited vehicle access, it may become necessary to generate seismic waves by using explosive charges. At these energy source locations, a special explosive material is placed at the bottom of a drill hole to create seismic waves. The seismic waves are then recorded by surface recording equipment.

Proposed Action

Dawson Geophysical proposes to perform a 3-D seismic operation with energy source points and receivers arranged in a grid pattern (*project map provided to BLM December 5, 2005, will be subsequently altered to protect cultural resources once Class III cultural resource inventories are complete*). This proposed geophysical operation is planned to be conducted during the Summer/Fall of 2006.

There will be 51 energy source lines running in an east-west direction laid out 1,320 feet apart, with vibrating points spaced at approximately 311 foot intervals along the lines. There will be 90 receiver lines running in a northwest-southeast direction. These lines will be spaced 880 feet apart, with geophone receiver spacing at approximately 220 foot intervals.

Project design surveying and staking for the seismic prospect has been completed (this activity is considered a casual use, though the operator will typically consult with the BLM prior to surveying and staking). The surveying and staking was completed with GPS units, and resulted in the placement of lath, flagging, and pin flags to guide the operations (pink pin flags at source points, orange pin flags at receiver points).

During this pre-project planning activity, the operator seeks to avoid stabilized sand dunes, wetlands and lakes, existing rangeland, recreational, and oil and gas infrastructure. Vehicle use is not authorized on slopes 25% or greater. The operator is required to stay at least 500 feet distant from surface waters, wetlands, and riparian areas. Vehicular traffic across/through drainage channels is limited to sloping drainage sides or to vertical banks of less than two feet. Known communities of sensitive plant species are avoided.

Subsequent to the surveying and staking, a Class III cultural resources inventory is conducted along the proposed routes for motorized equipment (vibroseis and shot hole buggy paths along source lines, access within the project area, etc.). The Class III cultural resources inventory is summarized in a report, which is submitted to the BLM for review and consideration. This review ensures compliance with the various BLM policies, the programmatic agreement between the State Historic Preservation Office (SHPO) and the BLM, and the laws, rules, and regulations regarding the protection of cultural resources. As a result of the Class III cultural resources inventory, the surveyor will, in coordination with the archaeologists, ensure that successful avoidance of identified cultural resources is incorporated into the proposed action.

Dawson Geophysical proposes to use a variety of vehicles to access their receiver and source lines. Energy source locations will be vibrated by specialized articulated vibroseis buggy trucks that have a gross vehicle weight of approximately 62,500 pounds. The vibroseis buggy trucks that will be used in this project would have extra wide, low-pressure tires (10-15 psi) that help distribute the weight of the vehicle, thus reducing surface compaction. They will access the source lines by using existing roads and vehicle routes. Cross-country travel will only be allowed on routes surveyed for cultural resources. In areas identified as having cultural sites, vehicular traffic would not be allowed. Generally, cross-country travel on the source lines would only require one trip. However, where land obstacles or cultural avoidance areas are encountered, vibroseis buggy trucks would be required to backtrack on the source lines and

some of the receiver lines. Dawson Geophysical will use two sets of four Mertz IVI vibroseis buggy trucks, with an additional vibroseis available as a spare, in a staggered side-by-side line arrangement traveling in a linear direction.

In some areas where vibroseis vehicle access is limited due to topography, it may become necessary to generate seismic waves by using explosive charges. At these energy source locations, a 10 pound explosive charge is placed in a 40 foot-deep drilled hole and shot to create seismic waves that are recorded by surface recording equipment. Dawson estimates that approximately 40% of the energy source points will be acquired using drilled shot holes. Buggy Drills and heliportable drills would be used to drill the shot holes. All shot holes would be plugged in accordance with WOGCC guidelines to prevent degradation of water quality. When recording operations reach the areas where source is to be created by sub-surface explosives, the pre-set charges will be individually detonated by a "shooter" on an ATV. These "shooters" will travel source lines as necessary two times in the performance of shooting operations once as ingress and once as egress. After detonation, cap wires will be cut off below ground level, and lath and flagging will be removed at that time. Shooting operations will normally be performed during daylight hours.

Buggy drills would be standard IVI Buggy drills with accompanying water buggies. The units typically have a length of 26 feet, a width of 8 feet, and a height of 10 feet to 20 feet (depending on whether the mast is up or down). This type of buggy drill typically exhibits a ground pressure of approximately 5-10 pounds per square inch (PSI). Buggy drills would be limited to slopes of less than 25%; however, their use is also limited by other terrain factors (i.e., incised terrain, gullies, outcroppings, stands of tall shrubs or trees, etc.), and the ability to travel sideslope (which is limited to 12%).

Heliportable drills would be utilized in areas exhibiting rough terrain, as well as in sensitive areas that are not able to support the weight of the buggy drills. A helicopter would be used to transport portable drills to each designated hole location, eliminating the need for cross-country vehicle travel. The area of impact from drilling operations would be limited to the area immediately surrounding the shot hole location. Three pieces of equipment would be transported to the shot hole locations, each of which weighs approximately 1,300 pounds: the heliportable drill, which is 40 inches wide, 8 feet long and equipped with a seven-foot tall mast; a compressor, which is 30 inches wide, 48 inches long, and 36 inches tall; and a support basket, which is 5 feet long, 5 feet wide, and 3 feet tall that is used to carry the drill rods, fuel, and other supplies.

To position the geophones along the receiver lines, Dawson Geophysical will use a helicopter to carry bags of geophone cable and associated equipment to various locations along the receiver lines. From the drop-off locations, crews will lay out equipment on foot. ATVs will also be used to transport equipment, where needed. To access the source locations, the buggy trucks will travel on the receiver lines when necessary. The reverse process will take place when the equipment is retrieved. During equipment retrieval, the lath, flagging, and pin flags placed during surveying and staking operations would also be removed and disposed of at an authorized disposal facility. The support personnel necessary to layout and pickup the geophones will be transported via crew transport vehicles (*on existing roads and vehicle routes only*) and ATVs.

For the purposes of this analysis, it is assumed that the project consists of 60% vibroseis. Source lines total approximately 328 linear miles and receiver lines total approximately 696 linear miles. Tire, vibe pad, and ATV impact to the land surface from all off road vehicle travel is estimated to be approximately 2.7% of the overall project area or 1,441 acres.

Staging areas for the equipment deployment, the helicopter landing zone, and the helicopter fuel storage will be located on private land. The areas will be located on sites previously disturbed, where possible. The staging area would be located at NW¼ section 19, T. 19 N., R. 88 W.

Other vehicles that would be used on the project include, but are not limited to: 1) a single, additional articulated buggy vibrator (to ensure continuity of operations if another breaks down); 2) one vibrator service/fuel truck (Ford F-800); 3) six, 1-ton crew cab trucks (personnel support, transfer, transport recording equipment); 4) one, F-800 recording truck; 5) two, 15-passenger van; 6) one, ¾-ton pickup truck; 7) two, 1-ton crew cab service truck; 8) 6, Kawasaki Mule ATVs; 9) two, 48-foot van trailer (for equipment transport/battery charging); 10) one, 48' flat deck trailer for equipment transport; 11) four, 20-foot ATV trailers; 12) one AStar model helicopter; 13) one fuel trailer; 14) one support vehicle; and 15) a complete 4500 Channel MRX Recording System (including boxes, batteries, cables, and geophones).

Operations would be conducted 12-14 hours per day, temporarily stopping for maintenance of equipment, during inclement weather/soil conditions, or if other stipulated circumstances apply. The operations would require a crew of approximately 50 people. Dawson Geophysical plans on temporarily housing the crew in Rawlins, Wyoming. Recording operations are expected to take approximately 60 days. Project recording operations would begin first in the western portion of the project on Atlantic Rim and work towards the east.

After the operations are completed, Dawson Geophysical would ensure that all pin flags, lath, ribbon flagging, and trash are removed and disposed of at a Wyoming Department of Environmental Quality approved disposal site. The BLM would conduct periodic field inspections of the operations, and a final fly-over of the project area once completed to ensure compliance with the Terms and Conditions.

Dawson Geophysical shall follow all recommendations that mitigate potential environmental impacts as described on the approved NOI and the attached Special Terms and Conditions. The attached Terms and Conditions for Notice of Intent to Conduct Geophysical Exploration (BLM Form 3150-4a) and additional Special Terms and Conditions are hereby made part of the Proposed Action.

Project design survey/staking of the proposed project began in the spring of 2006 and would take 45 days. Archeological inventory of BLM portions of the project will follow the surveyors. Shot hole drilling is scheduled to commence in the spring/summer of 2006 (tentative), and should be complete within approximately 45 days. Geophysical recording is scheduled to commence in the summer/fall of 2006 (tentative), and should be complete within approximately 60 days.

Applicable permits would be acquired from the BLM, State of Wyoming Oil and Gas Conservation Commission, Carbon County, and appropriate private surface owners.

No Action Alternative

Under the No Action alternative, the vibroseis project would not be authorized on BLM administered lands. Operations could still occur on state and private lands. Considering the landownership pattern and that BLM-administered lands comprise 41% of the Hatfield project, adoption of this alternative could possibly result in cancellation of the entire project. Existing land and resource use activities within the project area would continue generally as is. The Affected Environment descriptions presented in this EA also constitute the effects of the No Action alternative unless otherwise noted.

Alternatives Considered but Eliminated From Detailed Study

No unresolved resource conflicts were identified that necessitated development of additional alternatives, although three alternatives were considered, but eliminated from further consideration:

Exploratory Drilling Alternative – This alternative was considered but eliminated from detailed study since it is recognized that wildcat exploratory drilling would be a consequence of the No Action alternative.

Heliportable Drilling - Under this alternative, a helicopter would transport portable drills to the source point locations, limiting the need for cross-country vehicle travel. One helicopter is capable of supporting 4-6 drills. Assuming that each source point takes approximately three hours to drill, and that the number of source points would remain the same (7,872), heliportable drilling would require approximately 4,723 hours using five drills. Utilizing one helicopter, the drilling phase would take approximately 394 days of daylight hours only operation, with no down-time. Two helicopters and ten drills would reduce drilling time to approximately 197 days. Soil and vegetation impacts would be minimized due to the reduction of off road travel. The duration of disturbance to wildlife however, would be three to four times longer if the shot hole method were required. In addition, increases in the amount of time necessary to conduct the survey intensify the longevity of impacts and disturbances to recreationists, local residents, and other natural resources. The average total cost of drilling a single heliportable-drilled source point is approximately \$1,300-\$1,600. The cost of the project under this alternative is considered by the operator to not be economically feasible.

Buggy- Mounted Shot- Hole Method- Under this alternative, drills mounted on buggies would traverse the project area to drill shot holes for seismic exploration. Two buggies (one with the drill and one to hold drilling water) would traverse routes along source lines. Multiple passes over routes may be necessary for the transport of water. Soil and vegetation impacts along survey routes would be more apparent from the increased off road traffic. The length of time taken for drilling would be comparable to the heliportable drilling alternative if the same total number of drills were used. The cost of this alternative method would be approximately 50% greater than the proposed action alternative.

Passive Seismic Alternative - Passive seismic is a relatively new and unproven methodology for characterizing the subsurface with respect to oil and gas reservoir potential. This technique utilizes seismic receivers placed in the field in an array similar to conventional 3-D seismic technology, which record the naturally occurring seismic activity. This methodology does not require the need for man-made energy sources (i.e. dynamite, vibrators, or air guns). Receivers pick up energy released from micro-seismic events occurring deep within the earth's crust.

There are noteworthy reasons why this methodology was eliminated from analysis. First, the amount of time necessary to collect data with passive seismic technology is highly variable and dependent on the natural seismic processes within the earth's crust. These natural seismic events are also highly unpredictable in time and space. In some test examples using this method, it took up to a year to collect enough data to provide a high-resolution image necessary to map and pinpoint the location of hydrocarbon reservoirs. In areas with a low occurrence of natural seismic activity the process could take many years. In the oil and gas exploration industry today, there are time constraints set by regulatory and surface permits, as well as mineral lease agreements. In addition, increases in the amount of time necessary to conduct the survey intensify the longevity of impacts and disturbances to wildlife, recreationists, local residents, and natural resources. The amount of time required to collect data can increase project costs through maintaining field crews for longer periods of time.

Another reason is there are still problems with the reliability of the data. The stratigraphic units that are being targeted in the seismic survey are in the 20-50 foot range. The best resolution acquired through passive seismic, documented and published to date, is approximately 250 meters or 820 feet. Data with this resolution is not useful to the project at hand. Also, passive seismic only records velocity data and does not have any density component. Density data is necessary in stratigraphic interpretation." BLM contacted Micro Seismic Inc., a company specializing in passive seismic tomography to discuss applications of their technology to the project. They stated that passive seismic currently is still in an experimental stage for use in this particular type of exploration application. Passive seismic does not have the resolution required to delineate geologic targets smaller than 800-1000 feet. The current technology does not yield as high quality subsurface geologic data compared to that obtained using vibroseis or shot hole energy sources and closely spaced receiver points. Although useful for other

applications, passive seismic tomography has not yet been successfully used to duplicate data obtained from similar 3D seismic surveys.

For these reasons, this alternative was eliminated from analysis.

AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

The geographic area affected by the Proposed Action is delineated in the project location description and map.

Critical elements and other resources potentially affected by the Proposed Action are described in this portion of the EA. This section also provides an analysis of impacts/potential environmental consequences resulting from project implementation, and presents the expected impacts/ environmental consequences of the No Action alternative. Finally, this section of the EA presents mitigation measures developed in response to the anticipated impacts, in conformance with the RMP that would be applied to the project if approved.

Critical elements of the human environment (identified by the BLM NEPA Handbook H-1790-1 and subsequent Executive Orders), their status in the project area, and whether they would be affected by the proposed project are listed on Table 1.

TABLE 1 - Critical Elements of the Human Environment

Element	Status on the Hatfield 3D	Addressed in EA
Air quality	Not affected	No
Areas of critical environmental concern	Potentially affected	Yes
Cultural resources	Potentially affected	Yes
Environmental justice	Not affected	No
Farmlands, prime or unique	None present	No
Floodplains	None present	No
Native American religious concerns	Potentially Affected	Yes
Noxious/invasive plants	Potentially Affected	Yes
Threatened and endangered species	Potentially Affected	Yes
Wastes (hazardous or solid)	Potentially Affected	Yes
Water quality (surface and ground water)	Potentially Affected	Yes
Wetlands/riparian zones	Potentially Affected	Yes
Wild and scenic rivers	None present	No
Wilderness	None present	No

Other resource values potentially affected by the Proposed Action include the following: minerals; noise, waste, and safety; paleontology; range and livestock; recreation; socio-economics; soils; vegetation; visual resources; wildlife; and cumulative impacts.

MINERALS: OIL & GAS (AND OTHER) FACILITIES/FLUID MINERALS

Affected Environment

Oil and gas exploration and production is in an exploration and development mode within the Hatfield 3D project area. The majority of public minerals within the project area are leased for oil and gas. Within the analysis area, there are 3 producing wells, 11 shut in wells, 49 plugged and abandoned wells, and 0 wells

permitted for drilling. (Wyoming Oil & Gas Conservation Commission records available via the internet at <http://wogcc.state.wy.us>. Vibroseis and shot hole projects do not affect reservoir production/drainage.

There are no saleable minerals permits present. An unknown number of lode and/or placer mining claims may be present.

Environmental Consequences of No Action

Adoption of the No Action alternative is likely to result in the drilling of more wildcat exploratory wells and possibly 'dry holes' than would occur following completion of the proposed geophysical project. Dry holes, in addition to being a financial waste, would result in unnecessary and undue surface disturbance caused by construction of well pads and roads.

Environmental Consequences of the Proposed Action

Adoption of the Proposed Action would allow project participants to obtain and utilize 3D geophysical data, resulting in the greater likelihood of drilling producing wells, more efficient field development, and would be consistent with the National Energy Policy.

Vibroseis and shot hole operations near existing oil/gas wells, buried pipelines, buried telephone cables, or overhead power lines could cause transmission interference. With implementation of the safe distance prescriptions below, no impact to oil and gas related facilities is foreseen.

The proposed project would have no effect on saleable minerals permits or any lode and/or placer mining claims that may be present.

Should damage to existing facilities occur, Dawson Geophysical would be required to repair any damage (also see Approval Conditions for other resources).

Terms and Conditions to be Applied

1. Dawson Geophysical will utilize the *One Call* service to obtain information in the planning for and avoidance of buried utilities.
2. Energy source points shall be located a minimum of 300 feet from standing structures unless written permission to encroach closer has been given by the land owner (BLM H-3150-1 Handbook).
3. Surveying paint shall not be applied to any existing structures or objects (i.e., buildings, fences, signs, rocks, etc.)
4. The operator shall be required to repair any damage to facilities caused by their operations.

PALEONTOLOGICAL RESOURCES

Affected Environment/No Action Alternative

Geological formations exposed in the Hatfield 3D project area include the Cretaceous Lewis shale, Mesaverde group, Steele shale, and Niobrara formation. The youngest units exposed in the area consist of Quaternary and Recent alluvium and colluvium. Based on the Wyoming probable fossil yield classification, the Niobrara formation has a high likelihood for the occurrence of vertebrate fossils, although potential for fossils of scientific interest on the ground surface is relatively low. The majority of the project area has a layer of deep soils or alluvial material, rather than exposed bedrock. Deep soils and alluvium almost never preserve fossil material. These are the primary areas where the vibroseis

trucks would operate. The areas characterized by steeper terrain may have bedrock geologic formations exposed at the surface or shallowly buried. These are the areas where the shot holes would be drilled. A BLM database search for known paleontological sites was performed for the Hatfield 3D project area with no sites identified.

Environmental Consequences of the Proposed Action

The proposed project would have no effect on the paleontological values in the area due to depth of burial, limited outcrop exposure, and vegetative cover.

The vibroseis operations are a vibrating procedure that would occur on areas where there is a protective layer of soil or alluvium. This procedure would, therefore, not affect any important paleontological resources. In the areas where shot holes are proposed, there is a minor chance of impacting paleontological resources, but an impact would require the drill hole to be drilled directly on or through a fossil, as the explosive charge does not fracture the surrounding rock in a substantial manner. Fossils are rare enough, even in relatively rich geologic formations, that the chance of a drill hole contacting a fossil is extremely small. Because of the extremely small to non-existent risk to important paleontological resources due to the overall lack of surface disturbance, the BLM will not require a paleontological survey performed prior to the project.

With the implementation of the spread-out vehicle pattern (see Approval Conditions for visual resources) and the slope restrictions (see Approval Conditions for soils), impacts to paleontological resources are anticipated to be negligible. The standard discovery stipulation would apply.

Terms and Conditions to be Applied

1. The operator is responsible for informing all persons associated with this project that they shall be subject to prosecution for damaging, altering, excavating or removing any vertebrate fossil objects on site.
2. If vertebrate paleontological resources (fossils) are discovered on BLM-administered land during project operations, the operator shall suspend operations that could disturb the materials, and immediately contact the BLM Rawlins Field Office Manager (Authorized Officer). The Authorized Officer would arrange for evaluation of the find within 5 working days and determine the need for any mitigation actions that may be necessary. Any mitigation would be developed in consultation with the operator, who may be responsible for the cost of site evaluation and mitigation of project effects to the site. If the operator can avoid disturbing a discovered site, there is no need to suspend operations; however, the discovery shall be immediately brought to the attention of the Authorized Officer.
3. If non-vertebrate paleontological resources (fossils) are discovered on BLM-administered land during project operations, the operator shall contact the BLM Rawlins Field Office Manager (Authorized Officer), but is not required to suspend operations that could disturb a discovered site.

SOILS

Affected Environment/No Action Alternative

The dominant soils occupying the Atlantic Rim area are very shallow to moderately deep loam to clay soils. Slopes range from gently sloping (5%) to very steeply sloping (>35%). There are areas of sandy loam to loams soil over sandstone bedrock, but these are not as common. Most of the heavier soils have a high salt content and have low bearing strength.

Soils within the project area are frequently highly erodible regardless of slope. Sandy soil textures present in the proposed project area generally have a severe hazard for wind erosion and a slight or moderate hazard for water erosion due to naturally high infiltration capacities. Heavier, more clayey, soil textures generally have a slight or moderate hazard of wind erosion and severe hazard of water erosion.

Biological soil crusts may occur within the project area.

Soils in the project area are especially dependent on vegetative cover to prevent erosion; ground cover and root systems anchor the soil, recycle nutrients, and add scarce organic matter.

Environmental Consequences of the Proposed Action

Impacts to soils in the form of compaction and gully erosion could be created, principally by the proposed off-road vehicle traffic. Compaction reduces capacity for soils to absorb moisture, and results in reduced root growth and plant vigor. Off-road vehicle operations would crush, and to a lesser extent break off vegetation, but root masses of grass and forbs remain alive and intact and continue to hold soil in place, reducing or avoiding erosion. By offsetting individual vehicle drive paths (see Approval Conditions for visual resources), soil compaction and erosion as well as vegetation damage would be minimized. Vehicle tire impacts would occur on approximately 2.7% of the total surface area encompassed by the project.

Soil loss would generally be higher on sparsely vegetated slopes over 25%. To protect soils, existing BLM standards limit surface disturbance on slopes greater than 25%. With implementation of the slope restriction prescribed below, the project should result in minimal impacts.

Impacts to soils may also occur as a result of surface rutting caused by vehicle operations on wet soils. Existing BLM standards call for closure during such conditions. With implementation of the saturated soil restriction prescribed below, the project should not result in impacts to wet soils other than those noted.

Terms and Conditions to be Applied

1. No vehicle operations (buggy vibes, recorder trucks, pickups, ATVs) shall be allowed on slopes of 25% or greater.
2. Avoid constant use of the same access routes in order to reduce soil compaction. Highly erodible soils locations, particularly steep slopes, sand dune areas, or drainages, shall be avoided.
3. The operator shall not conduct vehicle operations during periods of saturated ground conditions when surface rutting over 4 inches would occur.
4. Damaged areas would be promptly stabilized by seeding with native plant species and utilizing temporary erosion control devices such as mulch and jute netting if warranted. Specific measures and locations for use would be determined during field investigations by personnel from the operator and the BLM.
5. The operator shall reclaim and reseed any areas where their operations have caused surface rutting or have otherwise removed all of the surface vegetation as directed by the Authorized Officer. Reclamation guidelines and seed mixtures are listed in Appendix A of the Terms and Conditions.

6. BLM controlled burns are scheduled in the project area during the Fall of 2006. All off-road vehicle travel is restricted in the areas that have been burned to avoid excessive soil erosion. Surveying and recording activities in the controlled burn areas shall be coordinated with BLM range staff (Chris Otto 307-328-4250).
7. In order to minimize soil compaction and impacts to vegetation from off road travel, extra wide, low pressure "terra tires" shall be installed on the buggy drills and vibroseis buggies to reduce ground pressure.

WATER RESOURCES

Affected Environment/No Action Alternative

The project is located in both the North Platte River drainage and the Great Divide Basin (a hydrologically closed basin). Separation, Little Sage, Emigrant, and Pine Grove Creeks are intermittent streams that lie within the project boundary. Other stream channels in the project area exhibit ephemeral flow during snowmelt and high-intensity, short-duration storms. The North Platte River would not be affected by water depletions or other activities.

Other water resources present include Rim Lake, Little Sage Reservoir, and several small unnamed natural ponds. Seasonally dry lakebeds are also found in the project area and consist of Eightmile Lake and several small unnamed playas. Potential exists for other undocumented springs and seeps. Stockwater wells and associated pipelines are addressed in the Livestock/Range section of this EA.

Water wells, surface water, springs, and riparian areas on BLM administered lands are protected by standard avoidance stipulations.

Sage Creek, downstream from State Highway 71, is listed on the 2004 Wyoming 303d list of water bodies with threats or impairments because of high sediment load due to the erosive soils. About 23,000 acres along the north and south basin rim slopes (USDA-SCS, 1972) in the Sage Creek Drainage have erosive saline soils with very low plant cover and a high percentage of bare ground (75-85%). These areas are east of Atlantic Rim where they occur in the project area and so are generally in the areas of less than 25% slope.

A 319 watershed project was initiated in 1998 by the Saratoga-Encampment-Rawlins Conservation District (SERCD) in cooperation with the USDI-BLM, NRCS, WGFD, and landowners. The project has resulted in reduced sediment loading through a combination of short duration grazing, riparian and drifts fencing, upland water development, improved road management, grade control structures, and vegetation filtering.

Environmental Consequences of the Proposed Action

Vibroseis and shot holes are not expected to affect features such as springs, seeps, or riparian areas in the project area. Safe operating distances shall be observed to eliminate disruption of the subsurface fissure or stream channel morphology, thus restricting or eliminating water flow. No impact is expected.

Vehicular traffic through riparian and wetland areas could result in a temporary increase in turbidity (water quality deterioration). If these areas are avoided, there would be no actual impacts. Vehicular traffic through/across the (ephemeral) stream channels could break down banks, increase sediment load, cause or accelerate erosion, and destabilize the channel. With application of the channel crossing stipulation listed below; however, impacts are minimized.

All shot holes would be plugged in accordance with WOGCC guidelines to prevent degradation of water quality.

With the Terms and Conditions to be Applied for soils, water resources, vegetation, and invasive species, threats or impairments to Sage Creek from the project are unlikely.

Terms and Conditions to be Applied

1. No source points shall be permitted within 500 feet of springs, seeps, or riparian areas.
2. No vehicle traffic shall be allowed in wetland and riparian areas; traffic shall remain on dry ground.
3. Vehicular traffic across/through drainage channels shall be limited to sloping drainage sides (less than 25% slope) or to vertical banks of less than two feet. Channel crossings shall be aligned perpendicular to the stream channel, to the extent practicable. No off road travel shall occur in channel crossings with standing water unless identified in the travel/route activity plan and/or approved by BLM.
4. A final travel route/activity plan for each phase of the project must be submitted and reviewed by BLM before work begins. Please allow three weeks for the review of the plan.
5. Multiple vehicle passes shall be minimized on the off road travel ways identified in the travel route/activity plan.
6. The Operator shall conduct all drilling and hole plugging operations in strict conformance with all Wyoming Oil and Gas Conservation Commission requirements
7. Submit a copy of the "Hole Plugger's log" for each hole of the shotline describing: whether the holes were wet or dry; static water level if appropriate; any flowing holes; breached or caved holes; approximate volume of bentonite used per hole; any lost hole locations; etc., with the Notice of Completion.
8. Shot holes shall be inspected for subsidence within one field season and prior to release of the bond liability.
9. Pumping water out of stock ponds or other water reservoirs on BLM administered land for any project use is not allowed, unless authorized by the BLM.

VEGETATION

Affected Environment/No Action Alternative

Vegetation in the project area consists of Wyoming big sagebrush; saltbush and greasewood fans and flats; desert shrub, aspen woodland; and mountain big sagebrush plant communities. Some of the species present in the project area include:

Grasses	Forbs	Shrubs	Trees
Bluebunch wheatgrass	Phlox	Wyoming big sagebrush	Aspen
Thickspike wheatgrass	Sandwort	Gardner saltbush	Common
juniper			
Western wheatgrass	Buckwheat	Greasewood	Willow
Indian ricegrass	Penstamon	Rabbitbrush	Mountain
mahogany			
Needle and thread	Indian paintbrush	Shadscale	Limber pine
Squirreltail	Globemallow	Winterfat	
Sandberg bluegrass	Prickly pear cactus	Horsebrush	
Slender wheatgrass	Mustard	Snakeweed	
Threadleaf sedge	Biscuit root	Birdsfoot sage	
Inland saltgrass	Wild onion	Basin big sagebrush	
Alkali sacaton	Sand sagewort	Spiny hopsage	
Idaho fescue	Arrowleaf balsamroot	Mountain big sagebrush	
Needle grass	Lupine	Bitterbrush	
Bluegrass	Larkspur	Serviceberry	
Elk sedge	Columbine	Snowberry	
Ross' sedge	Arnica	Wood rose	

Environmental Consequences of No Action

If the No Action alternative is selected and the proponent uses exploratory drilling (wildcat drilling) to collect information regarding the geology of the gas resources, the probability of disturbance of native vegetation would increase.

Environmental Consequences of the Proposed Action

The Hatfield 3D project would involve direct surface impacts to approximately 1,441 acres of land. It has been observed on previous geophysical projects that woodier plants in the vibroseis vehicle paths are sometimes impacted but more tender and resilient grasses and forbs survive and continue to occupy the vehicle paths. Observations indicate that the woody shrub species (e.g., sagebrush) are the most prone to wheel damage. Stems may be broken or the entire plant crushed resulting in reduced canopy cover or possibly eventual death. Old, decadent plants are easily damaged by wheel impacts whereas younger plants such as seedlings possess the resiliency to recover from crushing in the same manner as grasses and forbs. It should be noted that most sagebrush species and sub-species canopies contain dead stems when severe environmental conditions such as prolonged drought exist. It should also be noted that in any healthy sagebrush stand, the population age structure consists of 8-10% dead plants.

The response of shrub species to mechanical disturbance is variable by species, age of plant, precipitation regime, altitude, parent soil characteristics (e.g., soil type, chemical and physical attributes), amount of traffic, time of year and other factors. Vibroseis geophysical projects conducted under snow and frozen ground conditions typically leave little to no visible trace, killing less than 5% of the brush which is driven on. Based on observation of other summer/fall vibroseis projects in areas of the relatively tall Wyoming, mountain, and basin big sagebrush, however, approximately 60% of the sagebrush driven over is killed, another 20% is partially killed or "pruned," and the remaining 20% is undamaged. In environments where relatively low Wyoming, black, and low sage predominates, brush kill by dry season projects is less with only approximately 40% of low sage in drive paths killed and another 20% partially killed or damaged. Relatively low-growing desert shrub and sagebrush communities predominate in the subject project area, with taller shrubs confined to areas of deeper soils and greater available moisture such as on floodplains and uplands. It is assumed that the proposed period of project field operations this fall/winter would occur during dry weather conditions.

Vehicle impacts to grasses and forbs are anticipated in the same physical area as brush impacts but even shorter-term in effect as grasses and forbs are not killed and will re-sprout from their established root systems. If project operations are conducted during the dry summer and fall seasons, the remaining grass in the vehicle paths may be broken off with re-growth not anticipated until next spring. Seasonal dry grass and forb loss within the impact area, however, is not expected to be noticeable. Overall, with side-by-side vehicle travel paths (see Approval Conditions for visual resources) limited to areas of less than 25% slope (see Approval Conditions for soils), Hatfield vehicle traffic impacts to the general vegetation are expected to be minimal for the following reasons: Impacts are limited to species composition changes (not vegetation removal/dirt work); species composition changes will occur on 2.7% of the project area; species composition shifts would involve only a proportion change among existing native plants (no introduced species); and species composition changes would be temporary until new brushy plants begin to reoccupy the vehicle paths (also see impacts discussion for wildlife and cumulative effects).

With the Terms and Conditions to be Applied, future use of the off-road seismic travel routes as two track roads is unlikely.

All trees would be avoided by off-road vehicles and equipment; therefore, aspen habitat and the species that rely on this habitat would not be negatively impacted.

Terms and Conditions to be Applied

1. No cross-country operation of vehicles is authorized outside the approved travel route/activity plan.
2. The geophysical operations shall be conducted whereby the vibroseis and shot hole buggies stagger their paths of travel, so that no vehicle is treading over the path of another vehicle, except when using existing roads and vehicle routes. Optimally, this would occur such that the total disturbance width would be as narrow as possible.
3. Disturbance of vegetation would be limited by minimizing the number of times the vehicles travel over their designated off-road access routes. Steep slopes, dunal areas, or ephemeral drainage areas shall be avoided where possible. If required, damaged areas shall be seeded with native plant species recommended by the BLM authorized officer (Appendix A, Terms and Conditions).
4. To protect wildlife cover, all vehicle traffic should avoid stands of tall shrubs. Stands of tall shrubs are defined as areas in which the majority (more than 50%) of sagebrush, mountain mahogany, and/or serviceberry are 4 feet or taller.
5. Source points and vehicle traffic shall be offset around individual trees and where possible, entire stands, so that aspen habitat and the species that rely on this habitat would not be negatively impacted. No trees shall be cut.
6. In order to minimize soil compaction and impacts to vegetation from off road travel, extra wide, low pressure "terra tires" shall be installed on the buggy drills and vibroseis buggies to reduce ground pressure.

INVASIVE SPECIES

Affected Environment/No Action Alternative

Noxious and invasive weeds likely to be found in the project vicinity include: Canada thistle, Russian knapweed, hoary cress (whitetop), perennial pepperweed (giant whitetop), salt cedar, cheatgrass,

gumweed, Russian thistle, kochia, black henbane, and halogeton. Occurrence of these weed species has a much higher probability in areas of past disturbance and varies according to basic vegetative cover. Because invasive and noxious plants are typically very aggressive, special management is required to prevent existing infestations from spreading (or to eradicate these infestations) and prevent the introduction of weed propagules from outside sources.

Environmental Consequences of No Action

If the No Action alternative is selected and the proponent uses exploratory drilling (wildcat drilling) to collect information regarding the geology of the gas resources, surface disturbance would increase and the likelihood of the invasion of noxious weeds and non-native species would increase.

Environmental Consequences of the Proposed Action

Noxious and invasive weeds could be introduced to the area by infested equipment. With implementation of the vehicle washing stipulation, no increase of weed populations or species is foreseen. They can also be spread by driving thru existing patches. Educating the crews not to drive thru these patches would greatly reduce the potential for spread of these species by project vehicles.

Weeds could also invade and take hold in areas of surface disturbance caused by project operations. If reclamation and reseeding is undertaken promptly in any areas of unanticipated surface disturbance as prescribed, impacts to vegetation or weed occurrence would be minimized.

Terms and Conditions to be Applied

1. To minimize the potential for the introduction of new weeds, the operator shall thoroughly power-wash all field vehicles (buggy vibes, pick-ups, ATVs, etc.) before transporting them to the project area.
2. To help prevent the spread of existing populations of invasive and/or noxious weeds, information on the more common species with potential for occurrence in the project area shall be distributed to crew members. The crew members shall be instructed to avoid travel through any populations of these species that they encounter, and asked to report the locations of the populations to the BLM.
3. The operator shall reclaim and reseed any areas where their operations have caused surface rutting or have otherwise removed some of the surface vegetation as directed by the Authorized Officer. Reclamation guidelines and seed mixtures are listed in Appendix A of the Terms and Conditions.
4. Weeds shall be controlled on project disturbed areas and native areas infested as a direct result of the project. The control methods shall be in accordance with guidelines established by the EPA, BLM, state and local authorities. Prior to the use of pesticides, the operator will obtain written approval from the BLM Authorized Officer (meaning an approved Pesticide Use Proposal form--showing the type and quantity of material(s) to be used, pest(s) to be controlled, method of application, etc.).
5. Until native vegetation is well established, a weed monitoring program may be required on rehabilitated locations associated with the project as directed by the Authorized Officer.

RANGE/ LIVESTOCK

Affected Environment/No Action Alternative

The project encompasses the Sixteen Mile, Bolten Ranch, Bull Canyon, Emigrant, Fillmore, and Doolittle grazing allotments. The Sixteen Mile allotment is used by cattle and sheep year round on a rotation basis. The Bull Canyon allotment is used by cattle year round on a rotation basis. The Bolten Ranch, Emigrant, and Fillmore allotments are used by cattle in the spring on a rotation basis (depending upon yearly condition of the rangeland). The Doolittle allotment is used by cattle and sheep in the spring on a rotation basis (depending upon yearly condition of the rangeland).

There are several water developments in the project area. Eight fence lines traverse the area along the allotment boundaries and as pasture fences.

Four new pasture fencing projects, totaling approximately 10 miles of mixed barbed and high-tensile electric fence, are scheduled to be constructed in the project area during the spring and early summer of 2006. After construction of the fence lines, off road vehicle travel through the fences would be restricted to gated or cattleguard crossings.

Controlled burns are scheduled in the project area during the fall of 2006. All off-road travel would be restricted in the areas that have been burned to avoid excessive soil erosion. Project activities would be coordinated with BLM range staff in regards to the fencing projects and the controlled burns.

Environmental Consequences of the Proposed Action

Leaving fences down or gates open when livestock are present may result in livestock moving between pastures, from private or State to public land or vice versa, onto highways, and herd mixing. This could lead to unauthorized grazing, overgrazing, or increased livestock operator cost associated with sorting mixed herds. With implementation of the fence and lessee notification measures prescribed below, the project should result in minimized impacts.

Seismic activities operations in close proximity to water wells and pipelines or water impoundments could result in casing failure or dam fissure and a subsequent loss of livestock water. With implementation of the water restrictions prescribed below, the project should result in no impacts. Other types of surface water are addressed under Water in this EA, while pipelines are covered under the Oil & Gas section of this EA. Heavy vehicle traffic could cause damage to existing cattle guards. With implementation of the facilities repair/replacement responsibility measures prescribed, the project should result in minimized impacts.

The Proposed Action would result in short-term vegetative effects on a small percentage of the project area. This disturbance would consist primarily of conversion of an estimated 60% of the mature shrubs and forbs in the tire paths to grass and also to younger, more succulent shrubs and forbs. While species and age make-up of plants in the tire paths would change, available palatable livestock forage would not be appreciably affected. With side-by-side vehicle travel paths (see Approval Conditions for visual resources); livestock forage impacts are anticipated to occur in the short term and no long term effects are expected...

Terms and Conditions to be Applied

1. The operator shall make every effort to avoid disturbing or altering fences. Fences should be passable for most wire or cable apparatus, but vehicles are required to go around fences through established gated or cattleguard crossings. If a fence is broken in any capacity, the BLM range

staff (Chris Otto 307-328-4250) shall be notified immediately with the location in order to coordinate fixing the break by a qualified person.

2. Vibroseis and shot hole source points shall be located a minimum of 300 feet from all water wells, stockponds, and water developments unless written permission to encroach closer has been given by the landowner.
3. Moving or altering any range improvement project is not authorized. The Rawlins BLM range staff shall be notified prior to any moving or alterations. The operator shall be responsible for the repair and or replacement of any facilities damaged during the course of this project.
4. BLM controlled burns are scheduled in the project area during the spring and fall. All off-road vehicle travel is restricted in the areas that have been burned to avoid excessive soil erosion. Surveying and recording activities in the controlled burn areas shall be coordinated with BLM range staff (Chris Otto 307-328-4250).

WILDLIFE AND SPECIAL STATUS ANIMAL AND PLANT SPECIES

Affected Environment/No Action Alternative

In addition to the species specifically discussed below, the project area provides habitat for elk, mule deer, pronghorn antelope a variety of neo-tropical bird species, jackrabbit, cottontail rabbit, coyote, red fox, Wyoming ground squirrel, thirteen-lined ground squirrel, badger, and numerous mice and vole species. Identified important wildlife life history areas in the project area include raptor nests, greater sage-grouse leks (strutting grounds) and nesting habitat, and prairie dog towns. Information regarding these and other prominent species is derived from BLM and Wyoming Game and Fish Department (WGFD) data, compiled and is available via the BLM GIS computerized maps and mylar overlays.

The following Table represents the threatened, endangered, proposed and/or candidate species found in the project area, as provided from the U.S. Fish and Wildlife Service on March 31, 2005. This table provides a habitat description for each species and the rationale for each determination.

Habitat Descriptions and Projected Effects on USFWS Threatened, Endangered, Candidate, and BLM Sensitive Species for the Proposed Project

Common Name (scientific name)	Habitat	Rationale
Endangered USFWS		
Blowout penstemon (<i>Penstemon haydenii</i>)	Sparsely vegetated shifting sand dunes or wind carved depressions (blowouts)	No habitat present
Black-footed ferret (<i>Mustela nigripes</i>)	Prairie dog towns	Prairie dog towns not sufficient size for ferrets.
Wyoming toad (<i>Bufo baxteri</i>)	Riparian areas/wet meadows	Only known habitat is Laramie River valley
Threatened USFWS		
Colorado butterfly plant (<i>Gaura neomexicana</i> spp. <i>Coloradensis</i>)	Endemic to moist soils in mesic or wet meadows of floodplain areas in Laramie County, WY.	Outside the known area of occurrence, no designated habitat present
Bald eagle (<i>Haliaeetus leucephalus</i>)	Cottonwood associated riparian areas	No riparian areas within project
Canada lynx (<i>Lynx canadensis</i>)	Spruce/fir forests	No habitat present

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Platte River Species	Platte River System (water depletions)	No water depletions will occur for no effect on habitat
Preble's meadow jumping mouse (<i>Zapus hudsonius preblei</i>)	Riparian areas in Laramie County	No habitat present
Candidate species		
Yellow-billed cuckoo (<i>Coccyzus americanus</i>)	Riparian areas with cottonwood/willow	No habitat present
Sensitive BLM		
Laramie columbine (<i>Aquilegia laramiensis</i>)	Crevices of granite boulders & cliffs at 6,400-8,000 feet in elevation	No habitat present
Nelson's milkvetch (<i>Astragalus jejunus</i> var. <i>puppureus</i>)	Alkaline clay flats, shale bluffs & gullies, pebbly slopes, and volcanic cinders in sparsely vegetated sagebrush, juniper, and cushion plant communities at 5,200-7,600 feet in elevation	Potential habitat present
Trelease's racemose milkvetch (<i>Astragalus racemosus</i> var. <i>treleasei</i>)	Barren hills and washes of clay, shale, limestone, or sandstone at 6500-8200 feet in elevation	No habitat present
Cedar Rim thistle (<i>Cirsium aridum</i>)	Barren, chalky hills, gravelly slopes, & fine textured, sandy-shaley draws at 6,700-7,200 feet in elevation	No habitat present
Weber's scarlet gilia (<i>Ipomopsis aggregata</i> ssp. <i>Weberi</i>)	Openings in coniferous forests & scrub oak woodlands at 8,500-9,600 feet in elevation	No habitat present
Gibbens' beardtongue (<i>Penstemon gibbensii</i>)	Sparsely vegetated shale or sandy-clay slopes at 5,500-7,700 feet in elevation	No habitat present
Rocky Mountain twinpod <i>Physaria saximontana</i> var. <i>saximontana</i>	Sparsely vegetated <i>Atriplex gardneri</i> - <i>Elymus elymoides</i> communities on barren, fine-textured clays and shales, often with gypsum or bentonite; usually on slopes of 0-15% on low hills, knolls, and colluvial fans at elevations of 6800-7700 feet.	Potential habitat present
Persistent sepal yellowcress (<i>Rorippa calycina</i>)	Riverbanks & shorelines usually on sandy soils near high H2O line	Potential habitat present
Pale blue-eyed grass (<i>Sisyrinchium pallidum</i>)	Wet meadows, stream banks, roadside ditches, and irrigated hay meadows where standing water is available through the early growing season (elevation 7000-7900 feet). Often found on slightly alkaline soil.	Potential habitat present
Laramie false sagebrush (<i>Sphaeromeria simplex</i>)	Cushion plant communities on rocky limestone ridges & gentle slopes at 7,500-8,600 feet in elevation	Potential habitat present
Long eared myotis (<i>Myotis evotis</i>)	Conifer & deciduous forests, caves and mines	No habitat present
Fringed myotis (<i>Myotis thysanodes</i>)	Conifer forests, woodland chaparral, caves and mines	No habitat present
Townsend's big-eared bat (<i>Corynorhinus townsendii</i>)	Forests, basin prairie shrub (rock outcroppings within), caves and mines	Potential habitat present
White-tailed prairie dog (<i>Cynomys leucurus</i>)	Basin prairie shrub, grasslands	Potential habitat present
Swift fox (<i>Vulpes velox</i>)	Grasslands	No habitat present
Pygmy rabbit (<i>Brachylagus idahoensis</i>)	Basin prairie and riparian shrub	Potential habitat present
Wyoming pocket gopher (<i>Thomomys clusius</i>)	Meadows with loose soil	No habitat present
White faced ibis	Marshes, wet meadows	No habitat present

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<i>(Plegadis chihi)</i>		
Trumpeter swan (<i>Cygnus buccinator</i>)	Lakes, ponds, rivers	No habitat present
Northern goshawk (<i>Accipiter gentilis</i>)	Conifer & deciduous forests	No habitat present
Ferruginous hawk (<i>Buteo regalis</i>)	Basin prairie shrub, grasslands, (rock outcrops)	Potential habitat present
Peregrine falcon (<i>Falco peregrinus</i>)	Tall cliffs	No habitat present
Mountain plover (<i>Charadrius montanus</i>)	Basin prairie shrub, grasslands	Potential habitat present
Greater sage-grouse (<i>Centrocercus urophasianus</i>)	Basin prairie shrub, mountain foothill shrub	Potential habitat present
Columbian sharp-tailed grouse (<i>Tympanuchus phasianellus columbianus</i>)	Grasslands	No habitat present
Long-billed curlew (<i>Numenius americanus</i>)	Grasslands, plains, foothills, wet meadows	No habitat present
Burrowing owl (<i>Athene cunicularia</i>)	Grasslands, basin prairie shrub	Potential habitat present
Loggerhead shrike (<i>Lanius ludovicianus</i>)	Basin prairie shrub, mountain foothill shrub	Potential habitat present
Sage thrasher (<i>Oreoscoptes montanus</i>)	Basin prairie shrub, mountain foothill shrub	Potential habitat present
Brewer's sparrow (<i>Spizella breweri</i>)	Basin prairie shrub	Potential habitat present
Sage sparrow (<i>Amphispiza belli</i>)	Basin prairie shrub, mountain foothill shrub	Potential habitat present
Baird's sparrow (<i>Ammodramus bairdii</i>)	Grasslands, weedy fields	No habitat present
Northern leopard frog (<i>Rana pipiens</i>)	Beaver ponds, permanent water in plains and foothills	No habitat present
Great Basin spadefoot toad (<i>Spea intermontana</i>)	Spring seeps, permanent and temporary waters	Potential habitat present

Black-footed ferret (*Mustela nigripes*): Portions of the seismic project listed above are located in white-tailed prairie dog colonies that have been block cleared and non-block cleared for black-footed ferret. Block clearance means that these areas are not likely to be inhabited by black-footed ferrets. In these areas, take of individual ferrets and effects to a wild population are not an issue and surveys for ferrets are not longer recommended; however, this does not preclude the use of the area as a possible site for reintroduction. If white-tailed prairie dog towns or complexes greater than 200 acres will be disturbed within the non-block cleared areas, surveys for ferrets may be recommended in order to determine if the proposed project will result in an adverse effect to the species.

The U.S. Fish and Wildlife Service has determined that there is no evidence indicating that active prairie dog colonies will be adversely affected by geophysical exploration using vibroseis buggies, as long as the "shaking" avoids all openings to the burrows.

Based on the above information, authorization of the above project is not likely to negatively impact the prairie dog towns.

Based on the information provided, authorization of the project should have no affect on the following federally listed and Candidate species (due to lack of suitable habitat): Wyoming toad (*Bufo baxteri*), bald eagle (*Haliaeetus leucephalus*), Canada lynx (*Lynx canadensis*), Platte River species, Preble's meadow jumping mouse (*Zapus hudsonius preblei*), yellow-billed cuckoo (*Coccyzus americanus*), blowout

penstemon (*Penstemon haydenii*), Ute ladies'-tresses orchid (*Spiranthes diluvialis*), and Colorado butterfly plant (*Gaura neomexicana* spp. *Coloradensis*).

BLM Manual 6840 - Sensitive Species

Thirty six plant and animal species (including fish and amphibians) potentially present in the Rawlins Field Office have been accorded 'sensitive species' status as provided by the BLM Wyoming State Office on September 20, 2002. Inventory of sensitive species by BLM and Wyoming Natural Diversity Database (WYNDD) is ongoing. Among the sensitive species, mountain plover, raptors and greater sage-grouse are notable in that they are protected via seasonal timing restrictions on development.

Mountain Plover

Although this project is located within potential mountain plover (*Charadrius montanus*) habitat, there should be no adverse impacts to the species given the seasonal timing stipulations (no construction from April 10 through July 10) attached to the authorization for the project. Mountain plover habitat is known to include short-grass prairie and shrub-steppe landscapes dry-land, cultivated farms, and prairie dog towns. Because of the short term nature of the disturbance, and because essentially no surface-disturbing activities will be allowed during the nesting period, additional protective measures to protect nesting/brood rearing mountain plover will not be necessary. If the project proponents request an exception to seismic survey during this time frame, then mountain plover surveys must be completed to determine if the proposed project is within one-quarter of a mile of nesting/brood rearing mountain plover.

Migratory Birds

The Migratory Bird Treaty Act, 16 U.S.C. 703, enacted in 1918, prohibits the taking of any migratory birds, their parts, nests, or eggs except as permitted by regulations and does not require intent to be proven. Section 703 of the Act states, "unless and except as permitted by regulation it shall be unlawful at any time, by any means or in any manner, to take, capture, kill, attempt to take, capture, or kill, or possess any migratory bird, any part, nest, or egg of any such bird." Apart from the raptors, mountain plover, and greater sage-grouse (to be discussed later), there are four additional migratory birds, including both long-distance and local migrants, that have the potential to nest within and adjacent to these proposed projects. The habitat types that contain basin-prairie shrub (sagebrush) are located along the routes of the projects and may contain nesting habitat for the following migratory birds identified on the BLM Wyoming State Director's Sensitive Species List: the sage thrasher (*Oreoscoptes montanus*), loggerhead shrike (*Lanius ludovicianus*), Brewer's sparrow (*Spizella breweri*), and the sage sparrow (*Amphispiza belli*). Since the project area will have seasonal timing restrictions on disturbance already in place for mountain plover, raptors, and greater sage-grouse, impacts to these species should be minimized, since the project will occur after nesting is over for the season in those areas.

Raptors

The Bald Eagle and Golden Eagle Protection Act, 16 U.S.C. 668, prohibits knowingly taking, or taking with wanton disregard for the consequences of an activity, any bald or golden eagles or their body parts, nests, or eggs, which includes collection, molestation, disturbance, or killing.

There are approximately 5 ferruginous hawk nests located within one mile of the proposed project. This species is a BLM Wyoming Sensitive Species. Other raptor nests that occur within three-quarters to one mile of the proposed project include 2 Cooper's hawk, 24 golden eagle, 1 great horned owl, 19 prairie falcon, 28 red-tailed hawk, and 2 Swainson's hawk nests. The Rawlins Field Office's wildlife timing stipulations will be required, which states that construction, drilling, and other activities potentially disruptive to nesting raptors are prohibited (within three-quarters to one mile of a nest, depending on

species) during the period of February 1 to July 31 for the protection of raptor nesting areas. With the implementation of the timing stipulation, there should be no adverse impacts to nesting raptors.

Raptor nest inventories have been conducted in the Hatfield 3D project area.

Greater Sage-Grouse

Six greater sage-grouse strutting areas (leks) are known to exist in the Hatfield vicinity. An additional 10 leks occur outside of the project area, but within two miles of the project area. The 2-mile timing buffer accorded to grouse leks is intended to prevent disturbance to strutting and nesting grouse. Because of the timing stipulations required if these leks are determined active, there should be no negative impacts to strutting and nesting greater sage-grouse from implementation of this project.

Areas of tall (>4 ft) sagebrush growth along drainages serve as wildlife corridors, providing hiding cover from predators as well as thermal shelter for wintering wildlife. Stands of tall sagebrush occur in several areas within the Hatfield 3D project area. Vehicle traffic shall avoid stands of tall sagebrush.

Sensitive Mammals

The pygmy rabbit, Townsend's big-eared bat, long eared myotis, and fringed myotis may occur within the project area. However, records of these species from the Rawlins Field Office are extremely limited. If present, impacts are expected to include the loss and degradation of habitat. Stipulations for other species may reduce disturbance to these species during the breeding season.

Sensitive Amphibians

The Great Basin spadefoot toad may occur within the project area. They are found in the Great Divide Basin and outlying areas in sagebrush flats and desert shrub land. They breed from April through July in areas with temporary or permanent water.

Sensitive Plants

The project is expected to have no impact on the following BLM Wyoming sensitive species: Laramie columbine (*Aquilegia laramiensis*), Trelease's racemose milkvetch (*Astragalus racemosus* var. *treleasei*), Cedar Rim thistle (*Cirsium aridum*), Weber's scarlet gilia (*Ipomopsis aggregata* ssp. *Weberi*), and Gibbens' beardtongue (*Penstemon gibbensii*),

Potential habitat may occur for Laramie false sagebrush, Nelsons milkvetch, pale blue-eyed grass, persistent-sepal yellowcress, and Rocky Mountain twinpod within the project area. Operations would be offset accordingly to protect rare plant species if encountered. The Rawlins Field Office lacks inventory data on the presence or absence of these species. The persistent-sepal yellowcress and pale blue-eyed grass occur along the banks of rivers and streams, as well as man-made stock ponds and reservoirs. Since the Terms and Conditions for the project state "No vibroseis and shot hole (source) points shall be permitted within 500 feet of springs, seeps, or riparian areas", no impact is expected to these species from project activities. The Laramie false sagebrush, Nelsons milkvetch, and Rocky Mountain twinpod may occur associated with clay soils, sagebrush, saltbush, and cushion plant communities. The presence of these plants is ultimately unknown. The Terms and Conditions for the project state "Crews shall receive information regarding Laramie false sagebrush, Nelsons milkvetch, pale blue-eyed grass, persistent-sepal yellowcress, and Rocky Mountain twinpod (Appendix B, Terms and Conditions) in order to help enable them to identify and avoid these sensitive species". However, impacts to the species may still occur (See Vegetation section), since the project may occur outside of the blooming period for these species when they are harder to identify. With the Terms and Conditions to be Applied, including those for soils and vegetation, impacts to the potential habitat of sensitive plants would be minimized.

Big Game Species

Elk, mule deer, and pronghorn antelope are found in the project area. Impacts to big game includes displacement and increased stress during project operations, and habitat degradation due to project operations. Crucial winter range for elk occurs along Atlantic Rim in the western portion of the project area. Impacts to big game within the project area will be minimized by implementing the seasonal restriction for big game crucial winter range from November 15 to April 30. However, outside of that time period big game is expected to be displaced from the area during project operations.

Aquatic Considerations

There are small streams within the project area that have wild populations of creek chub. These are Little Sage Creek, Pine Grove Creek, and Emigrant Creek. There are no game species present. Rim Lake, which is located within the project area, is currently managed as a Basic Yield fishery for rainbow trout. Adjacent to the project area, Teton Reservoir is managed as a Basic Yield fishery for rainbow and brown trout and Emigrant Reservoir is managed as Basic Yield fishery for rainbow trout.

Environmental Consequences of the Proposed Action

Based on the information provided, authorization of the project should have no effect on the following species: black-footed ferret (*Mustela nigripes*), Wyoming toad (*Bufo baxteri*), bald eagle (*Haliaeetus leucocephalus*), Canada lynx (*Lynx Canadensis*), Preble's meadow jumping mouse (*Zapus hudsonius preblei*), Colorado River Species, Platte River Species, and yellow-billed cuckoo (*Coccyzus americanus*).

The proposed operations could impact mountain plover nesting and rearing activities if operations are conducted April 10 through July 10. Seismic operations are scheduled to begin after July 10; therefore, the Proposed Action is not likely to impact mountain plover nesting activity.

Raptor nesting could be disturbed if the proposed project were conducted between February 1 and July 31 unless an exception is granted based on existing conditions- meaning that a nest site within either ¾ of a mile of a seismic line or one mile (for the ferruginous hawk and golden eagle) is not active. Any checks for activity would be performed by RFO biologists during the appropriate nesting chronology for each species. With implementation of the raptor nest avoidance restriction however, no impact to nesting raptors is foreseen.

The proposed operations could adversely impact greater sage-grouse strutting, nesting, and rearing activities if conducted between March 1 and July 15 although exception to seasonal restrictions may be granted should conditions allow (only if the lek is inactive based on three field visits one week apart during the strutting season). With implementation of the greater sage-grouse inventory and avoidance prescription, no impact to greater sage-grouse strutting, nesting or rearing activities is anticipated

Geophone cable deployment and vehicle traffic will cause animals to leave the area of human activity. The scale of displacement would be dependant upon species as well as intensity of the human activity. Implementation of seasonal restrictions protecting wildlife during the more sensitive birthing/rearing season should minimize long term impacts to wildlife.

Noise and vibrations caused by the proposed vibroseis and shot hole operations would cause prairie dogs and other underground-dwellers to flee to their burrows while equipment is in close proximity. Due to the generally clay-like, loamy texture of soils in the project, vibroseis operations are not expected to result in burrow failure. However, should tunnel collapse occur, an animal within the tunnel could be crushed. Of interest, data suggest that within approximately 6 months of completion of a 3D vibroseis project, impacts associated with the geophysical activity appear to have had positive effects on new burrow construction, as loosened soil along vehicle travel paths is attractive to some burrowing rodents (Thomas 1995). In

sum, accidental entombment, temporary displacement, and stress to small animals may occur, but no long-term impacts to small mammals are expected. Moreover, impacts to small mammal predators, principally raptors, are also not anticipated.

With the Terms and Conditions to be Applied for soils, water resources, vegetation, and invasive species, threats or impairments to the Basic Yield fisheries for rainbow trout and other aquatic resources would be minimized.

Terms and Conditions to be Applied

1. Project activities potentially disruptive to nesting raptors are prohibited during the period of February 1 to July 31 for the protection of raptor nesting areas.
2. A biologist shall inventory raptor nest activity if the proposed project is scheduled to be carried out during the period February 1 to July 31.
3. Avoid surface disturbing and disruptive activities in suitable greater sage-grouse/sharp-tailed grouse identified nesting and early-brood rearing habitat between March 1 to July 15 unless exception is granted. A controlled surface use (CSU) applies within ¼ mile of lek perimeter. Avoid human activity between 6pm-9am March 1-May 20 within ¼ mile of lek perimeter.
4. Potential mountain plover habitat exists within the proposed project location. Project activities are prohibited during the reproductive period of April 10 to July 10 for the protection of nesting mountain plover.
5. Crucial winter range for elk exists within the project area. Project activities are prohibited during the period of November 15 to April 30 for the protection of big game winter range habitat.
6. Please be advised that due to limits on the available time of qualified personnel, the unpredictability of wildlife, and future weather conditions, requests for exceptions to impending wildlife stipulations will only be considered in the event of extraordinary and unavoidable occurrences over which the company has little or no control. Additionally, projects must be initiated in a time frame which would allow for completion of the project prior to the beginning date of wildlife protection stipulations.
7. Where prairie dogs are present, vibroseis is prohibited over active burrows and shot holes are prohibited within 200 ft, based on a shot hole depth of 40 feet and a charge weight of 10 pounds.
8. No dogs or firearms shall be in the possession of project employees within the project area.
9. To protect wildlife cover, all vehicle traffic should avoid stands of tall shrubs. Stands of tall shrubs are defined as areas in which the majority (more than 50%) of sagebrush, mountain mahogany, and/or serviceberry are 4 feet or taller.
10. Source points and vehicle traffic shall be offset around individual trees and where possible, entire stands, so that aspen habitat and the species that rely on this habitat would not be negatively impacted. No trees shall be cut.
11. Crews shall receive information regarding Laramie false sagebrush, Nelsons milkvetch, pale blue-eyed grass, persistent-sepal yellowcress, and Rocky Mountain twinpod (Appendix B, Terms & Conditions) in order to help enable them to identify and avoid these sensitive species.

VISUAL RESOURCES

Affected Environment/No Action Alternative

The Hatfield project falls within VRM Class III designation. No special visual or high sensitivity resources have been identified within the project area. Based on BLM guidelines within Class III areas, surface disturbance can reach moderate levels, but not dominate the viewshed; thus every attempt should be made to minimize the impacts of these activities through careful location, topographic screening, and minimizing disturbance.

Environmental Consequences of the Proposed Action

Off-road vehicle traffic by buggy vibes and repetitive passes by ATVs could cause linear obtrusions (i.e., two-track paths) across the landscape. This potential to create linear visual scars is possibly the most substantial impact by the Hatfield project. To avoid linear visual obtrusions, to reduce soil compaction, and to reduce the degree of vegetation loss, BLM requires that geophysical projects offset their vehicle operations such that the tires of one vehicle do not follow in the path of another. This approach has been successful for other geophysical projects and linear-two-tracks have not been created. With this vehicle offsetting system (see Approval Conditions below) and the prescribed slope restriction (see Approval Conditions for soils), visual impacts caused by the project are anticipated to be low level, short term, and comply with the VRM Class III status of the area.

Terms and Conditions to be Applied

1. The operator shall offset all off-road vehicle traffic over a 50-foot wide swath on either side of the staked seismic line, so that one vehicle does not drive the same path as another vehicle.
2. The operator shall clean up all project lathe, flagging, and incidental trash as operations proceed through an area. The collected trash shall be hauled to a DEQ approved disposal site.

RECREATION

Affected Environment/No Action Alternative

Recreational use in the project area is light and centers primarily on hunting. Antelope, elk, mule deer, and greater sage-grouse are the predominant species hunted; however, some prairie dog, and rabbit hunting also occur. Antelope rifle hunting in Areas 55, 56, and 108 runs from September 20 through October 14, mule deer rifle hunting in Areas 83 and 84 runs from October 1 through October 14, elk rifle hunting in Area 108 runs from October 11 through November 20, and greater sage-grouse hunting runs from September 23 through November 3. Statewide, cottontail rabbits can be hunted Jan 1-Mar 1 and Sept 1-Dec 31. Prairie dogs, jackrabbits, coyotes, and foxes can be hunted year-round.

BLM has authorized commercial big game outfitting in this area. Other dispersed recreational activities that may take place in the Hatfield project area include: traveling on the historic and scenic trails, off road vehicle (ATV) use, mountain biking, hiking, wildlife viewing, and sightseeing. The Rim Lake BLM recreation site is within the Hatfield 3D project area and is managed as Basic Yield fisheries for rainbow trout.

The Continental Divide National Scenic Trail follows the Bridger Pass Road (BLM Road 3301) where it crosses the Hatfield 3D project area.

BLM-administered lands in the project area are limited to existing roads. The RMP identifies off highway travel (OHV) use on public lands within the planning area as limited to designated roads and vehicle

routes. Where roads and vehicle routes have not been formally designated, vehicle use is limited to existing roads and vehicle routes. However, the RMP also recognizes OHV use to conduct geophysical operations in areas where there are off-road vehicle use designations, subject to appropriate limitations and mitigative measures. BLM has no authority to limit OHV use on privately held lands.

Environmental Consequences of the Proposed Action

Project operations could disrupt recreation activities by visibly and audibly intruding on recreationists and by temporarily displacing game, which would inconvenience hunters should project operations overlap with hunting seasons. Project recording operations would begin first in the western portion of the project on Atlantic Rim and work towards the east to help reduce disturbance to big game hunting. Considering the size of the active project operations area as compared to the size of surrounding big game and greater sage-grouse habitat and hunting area boundaries, project impact to hunting is expected to be minimal. With the Terms and Conditions to be Applied for soils, water resources, vegetation, and invasive species, threats or impairments to the Basic Yield fisheries for rainbow trout are unlikely. Similarly, in view of the low known levels of other recreation use in the Hatfield 3D project area and considering the vastness of nearby public lands not temporarily occupied by geophysical project activity, project effects to dispersed recreation are anticipated to be low and of short term duration. No impacts to recreation would occur following completion of the project.

In the BLM-RFO, temporary 'casual' off-road vehicle use is permitted on a case-by-case basis for the performance of tasks in support of formally permitted actions. Casual use in such instances is defined as the single pass of vehicles under 10,000 lbs GVW off-road, subject to the 25% slope restriction. Surveyors, biologists, and archeologists working on project planning and inventories operate under this exception. With the OHV use limitations stipulated, no resource damage is anticipated as of OHV casual use authorization.

Terms and Conditions to be Applied

1. Off-highway vehicle use in advance of issuance of project approval is limited to the single pass (no overlapping tire tracks) of vehicles under 10,000 lbs GVW (ATVs and ½ ton pick-ups or the equivalent in conformance with BLM Manual 3150, part 3.1.B.5). The 25% slope restriction and saturated soil restriction still apply.
2. The project area is located in an area used by pronghorn antelope, elk, and mule deer hunters. Big game hunting season is scheduled to begin September 20, 2006 in the project area. To mitigate potential conflicts between operations and hunting/recreational activities, the operator shall post signs along the primary access roads into the area (State Highway 71, BLM Roads # 3301, and #3420), if operations are being carried out, and provide an approximate end date for completion. As well, signs should refer the public to the BLM in the event that they have questions or concerns. Please provide telephone numbers of the Rawlins Field Office (307-328-4200). The signs shall be posted, if operations will overlap with the hunting season, no later than 30 days before startup. These signs shall be removed promptly upon completion of the project.
3. Project recording operations shall begin in the Atlantic Rim area first and work towards the east to help reduce disturbance to big game hunting.
4. Field personnel shall wear blaze orange vests, jackets or hats during rifle big game hunting seasons (September 20 – November 20).
5. Operations will not be conducted within the Rim Lake BLM recreation site.

SOCIOECONOMIC CONSIDERATIONS

Affected Environment/No Action Alternative

The Hatfield 3D project is located 12 miles south of Rawlins, Wyoming. The local economy is heavily dependent on oil and gas exploration and production. Other economic staples of the area are livestock operations and hunting.

A discussion of recent socio-economic conditions and trends for the area is given in the Draft EIS for the Rawlins Resource Management Plan (<http://www.rawlinsrmp.com>). Information in the document is incorporated by reference. Please refer to this document for information on the current status of local socio-economic conditions.

Environmental Consequences of the Proposed Action

Peak workforce at any one time for the Hatfield 3D project is expected to be approximately 50 persons and total time to complete the project is estimated at three to four months. Seismic crews would likely be headquartered in Rawlins, Wyoming. Crews would be transported to the project area and back to Rawlins on a daily basis. Most of the workers have permanent residences else where, consequently the project is not expected to place any demands on schools or other similar facilities.

It is unlikely that project activities would generate concern, opposition, or dissatisfaction among local residents; residents of local communities are accustomed to and generally accepting of oil and gas related activities, including seismic operations, and are unlikely to view this project as problematic, particularly since it is located largely on private land and adjacent to areas where previous oil and gas related activities have occurred. Private surface owners, who comprise 55% of the project area, receive monetary compensation from the proponent in return for permission to conduct the geophysical survey on their land.

An indirect economic benefit would be new producing gas wells in hydrocarbon-bearing strata identified through the geophysical data.

Terms and Conditions to be Applied

No Approval Conditions have been identified.

CULTURAL/HISTORICAL RESOURCES

Affected Environment/No Action Alternative

The Hatfield project files search area contains many known cultural resource sites, with most of the area still un-inventoried for cultural resources. Class III cultural resource inventory of the project area is needed to evaluate potential effects of the project to sites eligible for the NRHP. Following standard procedures established in the Wyoming State Protocol Agreement between the BLM State Director and the Wyoming State Historic Preservation Officer (Section VII, D1(a)), geophysical operations would be re-designed to avoid cultural resource sites eligible or unevaluated for the National Register of Historic Places (NRHP). Sites will be evaluated according to the criteria established by the National Historic Preservation Act of 1966, as amended (NHPA). Sites avoided by project redesign need not be evaluated.

Additionally, the Overland Trail crosses the southern portion of project area. The Overland Trail was the principal mail and stage route to the west from 1862 to 1868, and was also used extensively as an emigrant road. Evidence of the trail remains in the form of ruts and swales as well as associated artifacts.

The setting for much of the trail is undeveloped leaving a sense of what the area would have felt like in the 1800s.

The majority of sites found (and which may be anticipated) in the area are prehistoric camps exhibiting chipped stone artifacts and fire-cracked rock on their surface. Occasionally hearth stains are also visible on the site surfaces. Burnt bone, groundstone, and prehistoric ceramics could be present in the area, and potential exists for site complexes surrounding water sources. Prehistoric stone circles, rock alignments and cairns also occur in the region but with far less frequency. Historic-era cairns and tin can scatters also could be found, and would not be unexpected.

Environmental Consequences of the Proposed Action

The proposed seismic exploration could cause effects to sites eligible for the NRHP. An effect is defined as an alteration to the characteristics of a historic property qualifying it for inclusion in or eligibility for the National Register of Historic Places (43 CFR 800.16(i)). These effects could be in the form of direct, indirect or cumulative impacts. Direct impacts are physical and can adversely affect the site or its setting. Direct impacts could occur from vehicle traffic through sites during geophysical field operations, creating two-tracks, surface soil displacement and/or soil compaction. If exploration activities are carried out in wet weather, rutting could also occur within sites. The new trails could also affect the setting of sites for which setting is a component of site significance. By providing access into areas containing sites these paths could be used by the public and facilitate illicit artifact collection which could radically change site interpretations and result in the loss of important scientific information. Cumulative effects consist of a gradual degradation of the cultural landscape through erosion and illicit artifact collection, as well as the aggregate effects of possible development and use in an area, which affects the surface.

Vehicular traffic on the Overland Trail or other historic transportation routes could affect integrity of design, workmanship, and feeling of contributing segments. Off-road vehicle traffic within the setting of these historic transportation routes could affect their integrity of setting and feeling. With implementation of the Trail setting traffic restrictions prescribed, effects to the historic transportation routes would not be adverse.

With the implementation of the spread out vehicle pattern (see vegetation section) and the standard cultural resource procedures identified below (pursuant to the Wyoming BLM-SHPO State Protocols regarding implementation of the NHPA Sec. 106 and BLM 8100 manuals), no effect to significant cultural resources is anticipated. All cultural resources will be avoided by seismic project activities on source and receiver lines and staging areas.

Terms and Conditions to be Applied

1. Dawson shall provide a Class III cultural resource inventory report and site forms to the established Standards of Bureau of Land Management Wyoming Cultural Resource Use Permit. All cultural resources, unless previously determined not eligible to the National Register of Historic Places, will be avoided by all project activities, source and receiver lines, staging areas and heliportable activities. The Class III cultural survey will be guided by the following requirements:
 - a. **Travel Route/Activity Plan:** A map will be provided that has all the travel routes, staging areas, drive around ways, and support areas designated on it. This map will cover all transportation aspects of the project. This map will be at 1:24,000 foot scale. Smaller scale maps may be used for field compliance work. A copy of this map will be in the possession of all Dawson Field Crew Leaders during operation on the project.

- b. **Receiver Lines:** A Class III cultural survey does not have to be done on receiver lines unless they are part of the travel route/activity plan. Cultural resources identified during the records review will be avoided by project design. Receiver lines will only have foot traffic allowed during the project in those areas that are not part of the travel route/activity plan. Flagging and other designation methods will be maintained during the life of the project and removed when the project is over. Exceptions are when the geophone lines are tested. One ATV only will be present on the receiver line to fix problems as they are identified. Driving of the ATV will be limited in scope and confined to designated areas of the receiver lines geophone spreads. ATV traffic will not be allowed through identified sites, even for geophone testing. There will be no other vehicle traffic allowed on receiver lines unless they have been designated as part of the travel route/activity plan for moving equipment around. The receiver lines that are designated travel routes will have a Class III cultural resource survey completed (see Source Lines). No cross-country operation of ATV's is authorized.
 - c. **Source Lines:** Source lines are those lines on which all vehicle, buggy drill, and vibroseis truck traffic will occur. These lines will have a Class III survey completed during the design phase of the travel route/activity plan development. The travel route/activity plan map will show all of the drive around ways. All drive around routes, for cultural resources or for other environmental reasons, will be adequately marked. Flagging and other designation methods will be maintained during the life of the project and removed when the project is over. Source lines and travel routes will have a Class III survey conducted that is 100 feet wide, 50 feet either side of the center line. Where off road vehicles must turn around, a sufficient area will be surveyed at a Class III. Turn around areas will be shown on the map as well. No cross-country operation of vehicles is authorized outside the approved travel route/activity plan.
 - d. **Drive around Routes and Barriers:** The archaeological consulting firm, in conjunction with Dawson, will provide adequate visual protection for cultural resources. Standard site avoidance (by all vehicles including ATVs) entails, at a minimum, a 32.8-meter (100 foot) or more buffer zone around all eligible and unevaluated sites. Sites of potential Native American concern are subject to special measures, as specified below. Sites previously determined to be not eligible for nomination to the NRHP require no further action if the field reexamination confirms that the previous recordation is still accurate.
 - e. **Barriers** will be flagged on both sides of the source/receiver line that bisect a cultural resource.
 - f. **Drive-around routes** will be adequately marked and will be surveyed at a Class III level. Flagging and other designation methods will be maintained during the life of the project and removed when the project is over.
 - g. **Support Areas:** Staging, base stations, and equipment areas, as well as any other areas containing concentrations of people and equipment, will be surveyed at a Class III level with a suitable buffer, Area of Potential Effect. These areas will be identified on the travel route/activity plan map.
2. The operator is responsible for informing all persons who are associated with the operations that they will be subject to prosecution for knowingly disturbing historic or archaeological sites, or for collecting artifacts. If historic or archaeological materials are encountered or uncovered during any project activities, the operator is to immediately stop activities in the immediate vicinity of the

find and immediately contact the authorized officer (AO) at (307) 328-4200 (Rawlins Field Office). Within five working days, the AO will inform the operator as to:

- Whether the materials appear eligible for the National Register of Historic Places;
 - The mitigation measures the operator will likely have to undertake before the identified area can be used for project activities again; and
 - Pursuant to 43 CFR 10.4(g) (Federal Register Notice, Monday, December 4, 1995, Vol. 60, No. 232) the holder of this authorization must notify the AO, by telephone at (970) 826-5000, and with written confirmation, immediately upon the discovery of human remains, funerary items, sacred objects, or objects of cultural patrimony. Further, pursuant to 43 CFR 10.4(c) and (d), you must stop activities in the vicinity of the discovery and protect it for 30 days or until notified to proceed by the authorized officer.
3. Dawson will provide a cultural resource inventory report(s) addressing that portion of the project located within the area of potential effect of historic transportation routes/sites for which setting might be an issue. The report, including recommendations, will be submitted to BLM who, in consultation with the Wyoming SHPO, will determine effects of the proposed project. Geophysical activities will not be permitted to create visual intrusions or adverse effects to historic transportation routes/sites for which setting might be an issue. Based on determination of effect, BLM-RFO will issue project authorization for operations in this area with appropriate conditions.
 4. Dawson's archeological consultant will obtain a cultural resource files search printout from the SHPO Cultural Records Office shortly before commencing fieldwork. Based on this, the consultant will identify previously recorded cultural resource sites on federal and non-federal lands in the project area. Using site form copies obtained from SHPO, the consultant will plot these sites onto the project map for Dawson, who will design avoidance for these properties prior to the survey. Previously determined not eligible properties will be revisited to assure that they are adequately recorded.
 5. Due to the complexity/size of the project, the project will be conducted in phases. Before each phase is authorized to proceed, a final cultural report must be submitted and reviewed by a BLM staff archaeologist. Please allow three weeks for the review of the report and field review of the project.
 6. Source points must be at further than one quarter mile or the visual horizon (whichever is closer) of the Overland Trail. Geophone receiver cable within one quarter mile of the trail shall be placed by helicopter-assisted pedestrians.
 7. No project-related vehicle traffic (industrial access) is permitted on the Historic trails. The Historic trails may be crossed at existing disturbances or in areas previously determined to be noncontributing. Single pass crossings on poorly established roads will be permitted when the route is approved by the Bureau archaeologist and will not result in resource damage.
 8. Dawson is responsible for informing all persons in the area who are associated with this project that they will be subject to prosecution for knowingly disturbing historic or archeological sites, or for collecting artifacts. Also, should previously unrecorded cultural materials be encountered during the project, work shall be stopped until the BLM's Authorized Officer can be notified and then material properly evaluated by a qualified archaeologist.
 9. All off-road vehicular traffic will be confined to a corridor 100 feet wide (50 feet either side of the flagged centerline) along lines that have been inventoried for cultural resources.

10. Maps indicating the drive-around routes shall be carried by personnel in the field. If the situation arises where project personnel cannot determine the appropriate drive-around routes, Dawson must request assistance from the contract archaeologist or contact a BLM archaeologist.
11. Any cultural resource discovered by the operator, or any person working on his behalf, on public or Federal land shall be immediately reported to the authorized officer. Dawson shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the authorized officer. An evaluation of the discovery will be made by the authorized officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. Dawson will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the authorized officer after consulting with the holder. Dawson will be responsible for all costs of mitigation.

NATIVE AMERICAN RELIGIOUS CONCERNS

Affected Environment/No Action Alternative

Should unidentified sensitive sites of Native American concern, as defined by Executive Order 13007 be identified appropriate tribes shall be consulted and recommendations solicited regarding measures necessary to eliminate potential effects of the project. With implementation of the following measures there should be no impact to Native American Sacred sites.

Environmental Consequences of the Proposed Action

Previously recorded and yet unidentified sites of Native American concern could suffer impacts by adversely affecting their physical integrity or by interfering with their ceremonial use. Native American groups historically associated with this area consider prehistoric rock alignment, cairn, stone circle, rock art and potential funerary sites highly sensitive. These sites are specially managed by BLM via the use of buffer zones. Project-related cultural resource inventory may identify additional sites of these types within the Hatfield project area, particularly cairns and stone circle sites. With implementation of the following mitigation measure, however, the project should cause no impact.

Terms And Conditions To Be Applied

1. Native American sites including but not limited to rock art, cairns, and stone circles shall be avoided by vehicle traffic by a minimum of 300 feet unless closer activities are approved through completion of consultation with the affected tribes and written permission is given by the authorized officer.
2. Native American funerary sites will be evaluated on a case by case basis for site specific avoidance and mitigation measures.
3. Source locations must be at least ¼ mile from rock art sites or standing cairns unless closer activities are approved through completion of consultation with the affected tribes and written permission is given by the authorized officer.
4. Standard stipulations regarding human remains and other discoveries shall apply to this project. See Cultural/Historic Resources section above.
5. If any additional sites of potential Native American religious concern (e.g. rock art, vision quest structures, human burial sites, prehistoric cairns, stone circles) are identified by Dawson personnel within 500 feet of any proposed off-road travel route regardless of surface ownership, the BLM Rawlins Field Archaeologist shall be promptly notified. The need for special mitigative

measures and/or additional Native American consultation shall be determined by the BLM Rawlins Field Office.

NOISE, WASTE, AND SAFETY

Affected Environment/No Action Alternative

Major sources of noise within the project area at this time are occasional jet aircraft over flights at high altitudes, localized vehicular and light industry activity on local resource roads, drilling rigs and occasional blow-down sounds at existing wells within the project area. These noise sources currently create variably but generally modest sound disturbances within the area.

No 'contaminated sites' are present in the Hatfield area according to Wyoming Department of Environmental Quality Solid and Hazardous Waste sites data available via the Internet at <http://deq.state.wy.us>.

As may be expected, hazardous materials are present in the project area in the form of well drilling reserve pits, natural gas/oil pipelines, material transport containers on passing trucks, above ground fluid tanks at producing well locations, and fuel tanks in parked and moving vehicles. These materials, however, are contained and readily recognizable. Material Safety Data Sheets (MSDS's) for all hazardous materials associated with the proposed Hatfield geophysical operations are maintained by the operator's Crew Safety Officer and are available for review upon request.

Seasonally occupied dwellings are present on private land within the project boundary.

The presence of H₂S from oil and gas facilities is a known safety hazard for the project area.

Environmental Consequences of the Proposed Action

Seismic-related activities, including buggy vib engine noise, the sound of vibration at source points, shot hole detonations, helicopters, and support traffic would create sound disturbance within the project area of 90-112 dBa. These impacts would be transient as the project recording operations proceed across the 85 square mile area and would occur for the duration of the project. Because of the remote location of the proposed activity perception of the added noise would be primarily by wildlife and livestock, as human presence in the project and surrounding area is at very low levels (project employees notwithstanding), except in the active oilfield where noise levels are already elevated. Noise-related effects, consisting of temporary wildlife displacement and annoyance to some hunters and recreationists present are expected to be localized to activity areas (also see wildlife and recreation sections of this EA). Overall, project noise elevation is anticipated to be of moderate level and transient. Thus, no Approval Conditions are proposed.

Project markers in the form of wooden lath, ribbon flagging, pin-flags and spray paint could contribute litter/solid waste in the project area. However, the operator has made an operational commitment in their Proposed Action to remove project lath, flagging, and trash as recording operations progress, so no debris should remain behind the project as planned. No impact in this regard is foreseen and no Approval Conditions are recommended.

Hazardous substances such as gasoline, diesel, vehicle lubricating and hydraulic oil used in the field during project operations could contaminate natural resources, if spilled. With implementation of the waste disposal prescription, however, no long term impact is foreseen. Fires could be lit, causing serious safety hazards and loss of or damage to property.

Terms and Conditions to be Applied

1. The Operator shall clean up all project lath, flagging, and incidental trash as operations proceed through an area. The collected trash shall be hauled to a DEQ approved disposal site.
2. Energy source points shall be located a minimum of 300 feet from standing structures unless written permission to encroach closer has been given by the land owner (BLM H-3150-1 Handbook).
3. Hazardous materials, other than those identified in the operator's Plan of Operations, shall not be stored for any length of time on BLM administered land. Additionally, no hazardous waste shall be disposed of on federal land. The term hazardous material means: 1) any substance, pollutant, or contaminant that is listed as hazardous under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended, 42 U.S.C. 9601 et seq., and the regulations issued under CERCLA, 2) any hazardous waste as defined in the Resource Conservation and Recovery Act (RCRA) of 1976, as amended, and 3) any nuclear or nuclear byproduct as defined by the Atomic Energy Act of 1954, as amended, 42 U.S.C. 2011 et seq.
4. The operator shall clean up all oil, diesel or hydraulic fuel spills, including contaminated soils. All spill-related material shall be hauled to a Wyoming DEQ approved disposal site. Spills resulting from ruptured pipelines or well casings shall be cleaned up as directed by DEQ and the facility owner/operator.
5. The operator shall place all tanks holding bulk liquids within lined containment areas. Capacity of the containment area shall be 110% of the largest tank. Bulk liquids contained in tanker semi-trailers may be parked in a safe location on the staging area. Fueling of equipment or maintenance of equipment shall be done at least 500 feet away from riparian or other open water areas.
6. The operator shall prepare an Emergency Response Plan addressing fire and submit it to the Authorized Officer for review at least one week prior to any project field operations. The operator shall coordinate with the nearest paramedic providers for life flight and ambulance service to establish Landing Zones across the project. These zones will be used in case of serious injury to workers needing immediate evacuation.
7. The following information concerning the helicopter shall be reported directly to Rawlins Fire Dispatch Center at (307) 328-4393:
 - Dates of operation
 - Helicopter tail or N number
 - Location of landing zone/base (latitude and longitude)
 - Area the helicopter will be flying in (either on a map or geographical listing)
8. Explosives/detonators shall be transported in accordance with Federal Department of Transportation regulations. Explosives shall be stored and handled according to U.S. Bureau of Alcohol, Tobacco and Firearms (ATF) and Occupational Safety & Health Administration (OSHA) standards. Explosive materials storage shall be located out of sight and at least one-quarter mile from traveled roads.
9. Shot holes shall not be left loaded longer than is required to complete drilling and loading operations throughout the project area. Recording operations should commence as soon after

loading operations as is possible and should normally commence within 60 days of the completion of loading operations.

AREAS OF CRITICAL ENVIRONMENTAL CONCERN

Affected Environment/No Action Alternative

The Jep Canyon area (about 13,320 acres along Atlantic Rim is the western portion of the project area) was designated an Area of Critical Environmental Concern (ACEC) in June 1999. The ACEC consists only of federal lands in the area. The objectives for management of the Jep Canyon ACEC are to maintain the integrity of crucial winter habitat for elk, to maintain the productivity of nesting raptor pairs, to allow for development of oil and gas and coal, and to seek the cooperation of owners of adjacent property in management of the habitat. Surface-disturbing activities affecting soils and vegetation will be intensively managed to prevent loss of significant habitat. This will entail case-by-case examination of proposals to determine potential adverse effects and appropriate mitigation to minimize those effects. Certain times, of the year and certain areas will be avoided by spatial and temporal management of development, facilities, and uses.

Environmental Consequences of the Proposed Action

Environmental consequences would be the same as those discussed under the Soils, Water Resources, Vegetation, Invasive Species, Wildlife and Special Status Animal and Plant Species sections of the proposed action.

Terms And Conditions To Be Applied

With implementation of the mitigative measures discussed under the Soils, Water Resources, Vegetation, Invasive Species, Wildlife and Special Status Animal and Plant Species sections of the proposed action, the proposed project would have no negative affect to the Jep Canyon Area of Critical Environmental Concern.

CUMULATIVE IMPACTS

The BLM must consider the cumulative effects of the proposed action in conjunction with other activities. A cumulative impact is an impact on the environment that results from the incremental impact of the proposed action when added to other past, present and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7).

Proposed Action Alternative

With implementation of the proposed measures prescribed earlier in this document (see proposed action), the primary impact associated of the proposed action would be that of driving on approximately 2.7% of the ground surface in the project area and potentially damaging and to a lesser extent killing a percentage of the brush within the tire paths. This project would affect primarily vegetation and visual resources.

Incremental effects to overall vegetation are considered negligible because:

1. Potential impacts to native grass species would be short-term because of their resiliency and resprouting abilities.
2. Effects to overall vegetation are limited to species composition changes (not vegetation removal/dirt work);

3. Species composition changes may diversify greater sage-grouse habitat by temporarily increasing forbs.
4. Species composition changes would occur on less than 2.7% of the project area;
5. Wyoming big sagebrush and desert shrub cover types in the project area and adjoining areas are already widespread and abundant.
6. Species composition shifts would involve only a proportional change among existing native plants (no introduced species).
7. Species composition changes would be short term, as new brushy plants would begin to reoccupy the vehicle paths within a few years.

As with visual resources, BLM field inspection of past projects has indicated that 3D seismic projects do not leave major vegetative changes. The amount or percentage of sagebrush actually killed within the 'thinned' corridors (under tire tracks and pads) is considerably less than the area actually utilized, and vegetation begins to regenerate after short periods of time. Cumulative impacts to vegetation are therefore not expected to differ much from those described under environmental consequences above and are expected to be minimal

Including the Hatfield 3D seismic survey, a total of four geophysical surveys encompassing approximately 248 square miles are tentatively scheduled to take place during the Summer, Fall, and Winter of 2006-2007 in the western part of the Rawlins Field Office. Cumulatively, these actions could disrupt recreation activities by visibly and audibly intruding on recreationists and by displacing game, which could affect hunter success in the project area and in adjacent areas, should project operations overlap with hunting seasons. Considering the size of the active project operations areas as compared to the size of surrounding big game hunting area boundaries, project impact to hunting is expected to be localized and transient. Within the project area specifically, wildlife is expected to be displaced by the cumulative impacts from the seismic survey, the controlled burn planned during the fall of 2006, and hunting activities.

No positively attributable indirect effects (caused by the action and later in time or farther removed in distance, but still reasonably foreseeable) are foreseen as a result of approval of the proposed action. Some level of oil and gas well drilling (and associated impact) in the analysis area is anticipated in the foreseeable future, but energy exploration activity is anticipated with or without completion of the proposed geophysical survey. Well drilling, if, when, and where it occurs, is the function of multiple factors, principally whether the oil and gas rights are under lease, and whether economically-producible oil and gas resources are present. Nearby on-going drilling and exploration does attest to some level of hydrocarbon presence. While the geophysical project proponent is hopeful that data gathered via the project would be very positive, there is no guarantee of this. It is concluded that the proposed geophysical data gathering project would not in and of itself cause important direct or indirect change. Analysis of impacts related to future well drilling must be addressed when drilling plans, including at least the general number and general location of wells, are more firm.

Conclusively, considering the relatively low level and short-term nature of the anticipated project impacts and the implementation of the protective measures proposed, the proposed 3D project together with on-going activities would not adversely affect elements of the human environment.

No Action Alternative

Adoption of this alternative would not end oil and gas exploration or development. With or without the geophysical data, well drilling is anticipated in the project area. Without the 3D data, lessees are more likely to drill 'dry holes'; resulting in greater environmental impact than if they had the 3D data. Well pad and access road construction for dry holes involves removal of vegetation cover. Seismic exploration is the least surface disturbing means available to obtain subsurface geologic data.

PERSONS/AGENCIES CONSULTED

The persons/agencies consulted in the preparation of this EA are listed in Table 3.

TABLE 3 – List of Persons/Agencies Consulted

<u>Name</u>	<u>Position</u>	<u>Office or Organization</u>
Joe Broussard	Regional Manager	Dawson Geophysical
Zane Zirschky	Project Manager	Dawson Geophysical
John Morley	Permit Agent for	Dawson Geophysical
Craig Smith	Archaeologist	TRC
Jan Hart	Biologist	TRC
Patrick Walker	Archaeologist	BLM
Mark Newman	Geologist	BLM
Robert Lange	Hydrologist	BLM
Suzette Claypool	Legal Instruments Examiner	BLM
Chris Otto	Range Management Specialist	BLM
Krystal Clair	Recreation Planner	BLM
Susan Foley	Soil Scientist	BLM
Heath Cline	Wildlife Biologist	BLM
Glen Livingood	District Technician	SER Conservation District
U.S. Fish and Wildlife Service		
Wyoming Game & Fish Department		
Wyoming Oil & Gas Conservation Commission		